RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/541,345

DATE: 08/02/2001
TIME: 17:35:41

Input Set : A:\09541345.txt
Output Set: N:\CRF3\08022001\I541345.raw

```
3  <110> APPLICANT: Rondon, Isaac J
4         Ladner, Robert C
6  <120> TITLE OF INVENTION: BINDING PEPTIDES FOR CARCINOEMBRYONIC ANTIGEN (CEA)
8  <130> FILE REFERENCE: Sequence Listing DYX-016.0 US
10 <140> CURRENT APPLICATION NUMBER: US 09/541,345
11 <141> CURRENT FILING DATE: 2000-04-03
13 <160> NUMBER OF SEQ ID NOS: 107
15 <210> SEQ ID NO: 1
16 <211> LENGTH: 16
17 <212> TYPE: PRT
18 <213> ORGANISM: Artificial Sequence
20 <220> FEATURE:
21 <223> OTHER INFORMATION: Description of Artificial Sequence: CEA binding
22        polypeptide
24 <220> FEATURE:
25 <221> NAME/KEY: VARIANT
26 <222> LOCATION: (1)
27 <223> OTHER INFORMATION: Xaa is Asn, Asp or is absent
29 <220> FEATURE:
30 <221> NAME/KEY: VARIANT
31 <222> LOCATION: (2)
32 <223> OTHER INFORMATION: Xaa is Trp
34 <220> FEATURE:
35 <221> NAME/KEY: VARIANT
36 <222> LOCATION: (3)
37 <223> OTHER INFORMATION: Xaa is Asp, Phe or Val
39 <220> FEATURE:
40 <221> NAME/KEY: VARIANT
41 <222> LOCATION: (5)
42 <223> OTHER INFORMATION: Xaa is Asn, Glu or Met
44 <220> FEATURE:
45 <221> NAME/KEY: VARIANT
46 <222> LOCATION: (6)
47 <223> OTHER INFORMATION: Xaa is Asn, Leu, Met or Phe
49 <220> FEATURE:
50 <221> NAME/KEY: VARIANT
51 <222> LOCATION: (7)
52 <223> OTHER INFORMATION: Xaa is Asp, Gly, Ile, Lys, Phe or Thr
54 <220> FEATURE:
55 <221> NAME/KEY: VARIANT
56 <222> LOCATION: (8)
57 <223> OTHER INFORMATION: Xaa is Ala, Gln, Gly, Lys or Thr
59 <220> FEATURE:
60 <221> NAME/KEY: VARIANT
61 <222> LOCATION: (9)
62 <223> OTHER INFORMATION: Xaa is Arg, Asn, Asp, Glu or Gly
64 <220> FEATURE:
```

RAW SEQUENCE LISTING   DATE: 08/02/2001
PATENT APPLICATION: US/09/541,345   TIME: 17:35:41

Input Set : A:\09541345.txt
Output Set: N:\CRF3\08022001\I541345.raw

```
 65  221> NAME/KEY: VARIANT
 66  222> LOCATION: (10)
 67  223> OTHER INFORMATION: Xaa is Gln, Leu or Gly
 69  220> FEATURE:
 70  221> NAME/KEY: VARIANT
 71  222> LOCATION: (11)
 72  223> OTHER INFORMATION: Xaa is Ala, Trp or Tyr
 74  220> FEATURE:
 75  221> NAME/KEY: VARIANT
 76  222> LOCATION: (12)
 77 <223> OTHER INFORMATION: Xaa is Ala, Gly, His, Phe, Thr or Val
 79 <220> FEATURE:
 80 <221> NAME/KEY: VARIANT
 81 <222> LOCATION: (14)
 82 <223> OTHER INFORMATION: Xaa is Asn, Gln, Phe, Ser or Val
 84 <220> FEATURE:
 85 <221> NAME/KEY: VARIANT
 86 <222> LOCATION: (15)
 87 <223> OTHER INFORMATION: Xaa is Arg, Leu, Pro or Ser
 89 <220> FEATURE:
 90 <221> NAME/KEY: VARIANT
 91 <222> LOCATION: (16)
 92 <223> OTHER INFORMATION: Xaa is Leu, Ser, Trp or Tyr
 94 <400> SEQUENCE: 1
```
W--> 95 Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa
```
 96    1              5                 10                 15
 99 <210> SEQ ID NO: 2
100 <211> LENGTH: 16
101 <212> TYPE: PRT
102 <213> ORGANISM: Artificial Sequence
104 <220> FEATURE:
105 <223> OTHER INFORMATION: Description of Artificial Sequence: family of
106         preferred CEA binding moieties
108 <220> FEATURE:
109 <221> NAME/KEY: VARIANT
110 <222> LOCATION: (1)
111 <223> OTHER INFORMATION: Xaa is Asn or Asp
113 <220> FEATURE:
114 <221> NAME/KEY: VARIANT
115 <222> LOCATION: (6)
116 <223> OTHER INFORMATION: Xaa is Phe, Met, Leu or Asn
118 <220> FEATURE:
119 <221> NAME/KEY: VARIANT
120 <222> LOCATION: (7)
121 <223> OTHER INFORMATION: Xaa is Asp, Gly, Ile, Lys, Phe or Thr
123 <220> FEATURE:
124 <221> NAME/KEY: VARIANT
125 <222> LOCATION: (9)
126 <223> OTHER INFORMATION: Xaa is Arg, Asn, Asp, Glu, Gly or Trp
```

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/541,345

Input Set : A:\09541345.txt
Output Set: N:\CRF3\08022001\I541345.raw

```
128  <220> FEATURE:
129  <221> NAME/KEY: VARIANT
130  <222> LOCATION: (12)
131  <223> OTHER INFORMATION: Xaa is Ala, Gly, His, Phe, Thr, Tyr or Val
133  <220> FEATURE:
134  <221> NAME/KEY: VARIANT
135  <222> LOCATION: (15)
136  <223> OTHER INFORMATION: Xaa is Arg, Leu, Pro or Ser
138  <220> FEATURE:
139  <221> NAME/KEY: VARIANT
140  <222> LOCATION: (16)
141  <223> OTHER INFORMATION: Xaa is Leu, Ser, Trp or Tyr
143  <400> SEQUENCE: 2
```
W--> 144 Xaa Trp Val Cys Glu Xaa Xaa Lys Xaa Gln Trp Xaa Cys Asn Xaa Xaa
```
145    1               5                  10                 15
148  <210> SEQ ID NO: 3
149  <211> LENGTH: 10
150  <212> TYPE: PRT
151  <213> ORGANISM: Artificial Sequence
153  <220> FEATURE:
154  <223> OTHER INFORMATION: Description of Artificial Sequence: CEA binding
155        loop
157  <220> FEATURE:
158  <221> NAME/KEY: VARIANT
159  <222> LOCATION: (2)
160  <223> OTHER INFORMATION: Xaa is Asn, Glu or Met
162  <220> FEATURE:
163  <221> NAME/KEY: VARIANT
164  <222> LOCATION: (3)
165  <223> OTHER INFORMATION: Xaa is Asn, Leu, Met or Phe
167  <220> FEATURE:
168  <221> NAME/KEY: VARIANT
169  <222> LOCATION: (4)
170  <223> OTHER INFORMATION: Xaa is Asp, Gly, Ile, Lys, Phe or Thr
172  <220> FEATURE:
173  <221> NAME/KEY: VARIANT
174  <222> LOCATION: (5)
175  <223> OTHER INFORMATION: Xaa is Ala, Gln, Gly, Lys or Thr
177  <220> FEATURE:
178  <221> NAME/KEY: VARIANT
179  <222> LOCATION: (6)
180  <223> OTHER INFORMATION: Xaa is Arg, Asn, Asp, Glu or Gly
182  <220> FEATURE:
183  <221> NAME/KEY: VARIANT
184  <222> LOCATION: (7)
185  <223> OTHER INFORMATION: Xaa is Gln, Gly or Leu
187  <220> FEATURE:
188  <221> NAME/KEY: VARIANT
189  <222> LOCATION: (8)
```

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/541,345

DATE: 08/02/2001
TIME: 17:35:41

Input Set : A:\09541345.txt
Output Set: N:\CRF3\08022001\I541345.raw

```
190  <223> OTHER INFORMATION: Xaa is Ala, Trp or Tyr
192  <220> FEATURE:
193  <221> NAME/KEY: VARIANT
194  <222> LOCATION: (9)
195  <223> OTHER INFORMATION: Xaa is Ala, Gly, His, Phe, Thr or Val
197  <400> SEQUENCE: 3
```

W--> 198 Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Cys

```
199     1                 5                 10
202  <210> SEQ ID NO: 4
203  <211> LENGTH: 16
204  <212> TYPE: PRT
205  <213> ORGANISM: Artificial Sequence
207  <220> FEATURE:
208  <223> OTHER INFORMATION: Description of Artificial Sequence: CEA binding
209        polypeptide
211  <400> SEQUENCE: 4
212  Asn Trp Val Cys Asn Leu Phe Lys Asn Gln Trp Phe Cys Asn Ser Tyr
213     1                 5                 10                15
216  <210> SEQ ID NO: 5
217  <211> LENGTH: 16
218  <212> TYPE: PRT
219  <213> ORGANISM: Artificial Sequence
221  <220> FEATURE:
222  <223> OTHER INFORMATION: Description of Artificial Sequence: CEA binding
223        polypeptide
225  <400> SEQUENCE: 5
226  Asp Trp Val Cys Glu Asn Lys Lys Asp Gln Trp Thr Cys Asn Leu Leu
227     1                 5                 10                15
230  <210> SEQ ID NO: 6
231  <211> LENGTH: 16
232  <212> TYPE: PRT
233  <213> ORGANISM: Artificial Sequence
235  <220> FEATURE:
236  <223> OTHER INFORMATION: Description of Artificial Sequence: CEA binding
237        polypeptide
239  <400> SEQUENCE: 6
240  Asn Trp Asp Cys Met Phe Gly Ala Glu Gly Trp Ala Cys Ser Pro Trp
241     1                 5                 10                15
244  <210> SEQ ID NO: 7
245  <211> LENGTH: 16
246  <212> TYPE: PRT
247  <213> ORGANISM: Artificial Sequence
249  <220> FEATURE:
250  <223> OTHER INFORMATION: Description of Artificial Sequence: CEA binding
251        polypeptide
253  <400> SEQUENCE: 7
254  Asp Trp Val Cys Glu Lys Thr Thr Gly Gly Tyr Val Cys Gln Pro Leu
255     1                 5                 10                15
258  <210> SEQ ID NO: 8
```

```
259 <211> LENGTH: 16
360 <212> TYPE: PRT
361 <213> ORGANISM: Artificial Sequence
363 <220> FEATURE:
364 <223> OTHER INFORMATION: Description of Artificial Sequence: CEA binding
365       polypeptide
267 <400> SEQUENCE: 8
268 Asn Trp Phe Cys Glu Met Ile Gly Arg Gln Trp Gly Cys Val Pro Ser
269   1               5                   10                  15

272 <210> SEQ ID NO: 9
273 <211> LENGTH: 16
274 <212> TYPE: PRT
275 <213> ORGANISM: Artificial Sequence
277 <220> FEATURE:
278 <223> OTHER INFORMATION: Description of Artificial Sequence: CEA binding
279       polypeptide
281 <400> SEQUENCE: 9
282 Asp Trp Val Cys Asn Phe Asp Gln Gly Leu Ala His Cys Phe Pro Ser
283   1               5                   10                  15

286 <210> SEQ ID NO: 10
287 <211> LENGTH: 12
288 <212> TYPE: PRT
289 <213> ORGANISM: Artificial Sequence
291 <220> FEATURE:
292 <223> OTHER INFORMATION: Description of Artificial Sequence: parental
293       domain for design of microprotein display library
295 <220> FEATURE:
296 <221> NAME/KEY: VARIANT
297 <222> LOCATION: (1)..(12)
298 <223> OTHER INFORMATION: amino acid positions 4 and 9 are invariant Cys;
299       all other positions Xaa are varied but not Cys, to
300       provide a library of 2x10(8) different peptides
301       based on the template sequence
303 <400> SEQUENCE: 10
```

W--> 304 Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa

```
305   1               5                   10

308 <210> SEQ ID NO: 11
309 <211> LENGTH: 11
310 <212> TYPE: PRT
311 <213> ORGANISM: Artificial Sequence
313 <220> FEATURE:
314 <223> OTHER INFORMATION: Description of Artificial Sequence: parental
315       domain for design of microprotein display library
317 <220> FEATURE:
318 <221> NAME/KEY: VARIANT
319 <222> LOCATION: (1)..(11)
320 <223> OTHER INFORMATION: amino acid positions 3 and 9 are invariant Cys;
321       all other positions Xaa are varied but not Cys, to
322       provide a library of 1x10(9) different peptides
```

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

VERIFICATION SUMMARY
PATENT APPLICATION: **US/09/541,345**

DATE: 08/02/2001
TIME: 17:35:42

Input Set : **A:\09541345.txt**
Output Set: **N:\CRF3\08022001\I541345.raw**

```
L: 95 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1
L:144 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2
L:198 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3
L:304 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:10
L:326 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11
L:348 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:12
L:370 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:13
L:395 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:14
L:415 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:15
L:435 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:16
L:460 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:17
L:495 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:18
L:525 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19
L:555 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:20
L:623 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:23
L:734 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:29
L:754 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:30
L:774 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:31
L:799 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:32
L:834 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:33
L:864 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:34
L:894 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:35
L:973 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:36
```